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(FILE 'HOME' ENTERED AT 13:40:07 ON 17 MAR 2004)

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FILE 'MEDLINE, CAPLUS, BIOSIS, EMBASE, SCISEARCH, TOXCENTER, PASCAL,
CABA, CANCERLIT, BIOTECHNO, DRUGU, LIFESCI, ES BIOBASE' ENTERED AT
13:41:37 ON 17 MAR 2004

L2 20 S L1 AND (CMP-SIALIC ACID OR CMP-NANA)
L3 10 DUP REM L2 (10 DUPLICATES REMOVED)

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L3 ANSWER 1 OF 10 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:421646 CAPLUS

DOCUMENT NUMBER: 139:246171

TITLE: Chemoenzymatic synthesis of the sialyl- α -(2 \rightarrow 3')-lactosamine trisaccharide with a 3-aminopropyl group as a spacer at the reducing end
AUTHOR(S): Choudhury, Indrani; Minoura, Norihiko; Uzawa, Hirotaka
CORPORATE SOURCE: Laboratory of Advanced Bioelectronics, National Institute of Advanced Industrial Science and Technology (AIST), 1-1-1 Higashi, Tsukuba, Ibaraki, 305-8565, Japan

SOURCE: Carbohydrate Research (2003), 338(12), 1265-1270
CODEN: CRBRAT; ISSN: 0008-6215

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 139:246171

AB The trisaccharide, 3-aminopropyl 5-acetamido-3,5-dideoxy-D-glycero- α -D-galacto-2-nonulopyranosylonic acid-(2 \rightarrow 3)- β -D-galactopyranosyl-(1 \rightarrow 4)-2-acetamido-2-deoxy- β -D-glucopyranoside has been synthesized chemoenzymically for the first time. First, the acceptor 3-aminopropyl β -D-galactopyranosyl-(1 \rightarrow 4)-2-acetamido-2-deoxy- β -D-glucopyranoside was synthesized in a conventional chemical manner, and then it was coupled with **CMP-sialic acid** using α -(2 \rightarrow 3)-N-sialyltransferase to afford the desired trisaccharide by an enzymically stereocontrolled manner.

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 2 OF 10 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:640626 CAPLUS

DOCUMENT NUMBER: 138:121664

TITLE: Engineering of coordinated up- and down-regulation of two glycosyltransferases of the O-glycosylation pathway in Chinese hamster ovary (CHO) cells

AUTHOR(S): Prati, Elisabetta G. P.; Matasci, Mattia; Suter, Tobias B.; Dinter, Andre; Sburlati, Adriana R.; Bailey, James E.

CORPORATE SOURCE: Institute of Biotechnology, ETH Zurich, Zurich, CH-8093, Switz.

SOURCE: Biotechnology and Bioengineering (2002), 79(5), 580-585

CODEN: BIBIAU; ISSN: 0006-3592

PUBLISHER: John Wiley & Sons, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Production of O-linked oligosaccharides that interact with selectins to mediate cell-cell adhesion occurs in one segment of a branched glycan biosynthesis network. Prior efforts to direct the branched pathway towards selectin-binding oligosaccharides by amplifying enzymes in this branch of the network have had limited success, suggesting that metabolic engineering to simultaneously inhibit the competing pathway may also be required. We report here the partial cloning of the **CMP-sialic acid:Gal β 1,3GalNAc α 2,3-sialyltransferase (ST3Gal I)** gene from Chinese hamster ovary (CHO) cells and the simultaneous inhibition of expression of CHO cell ST3Gal I gene and overexpression of the human UDP-GlcNAc:Gal β 1,3GalNAc-R β 1,6-N-acetylglucosaminyltransferase (C2GnT) gene. A tetracycline-regulated system adjoined to tricistronic expression technol. allowed "one-step" transient manipulation of multiple enzyme activities in the O-glycosylation pathway of a previously established CHO cell line

already engineered to express α 1,3-fucosyltransferase VI (α 1,3-Fuc-TVI). Tetracycline-regulated co-expression of a ST3Gal I fragment, cloned in the antisense orientation, and of C2GnT cDNA resulted in inhibition of the ST3Gal I enzymic activity and increase in C2GnT activity which varied depending on the extent of tetracycline reduction in the cell culture medium. This simultaneous regulated inhibition and activation of the two key enzyme activities in the O-glycosylation pathway of mammalian cells is an important addition to the metabolic engineering field.

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 3 OF 10 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:735898 CAPLUS

DOCUMENT NUMBER: 136:53977

TITLE: Microbial Glycosyltransferases for Carbohydrate Synthesis: α -2,3-Sialyltransferase from *Neisseria gonorrhoeae*

AUTHOR(S): Izumi, Masayuki; Shen, Gwo-Jenn; Wacowich-Sgarbi, Shirley; Nakatani, Takuji; Plettenburg, Oliver; Wong, Chi-Huey

CORPORATE SOURCE: Department of Chemistry and the Skaggs Institute for Chemical Biology, The Scripps Research Institute, La Jolla, CA, 92037, USA

SOURCE: Journal of the American Chemical Society (2001), 123(44), 10909-10918

CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The α -2,3-sialyltransferase from *Neisseria gonorrhoeae* was overproduced in *E. coli* for exploitation of its substrate specificity and synthetic utility. Several potential acceptor substrates were synthesized in this study, including mono- and oligosaccharides, glycolipids, and glycopeptides and their sulfate derivs. Some **CMP-sialic acid** derivs. with modification at the C-5 position were also prepared for evaluation as donor substrates. It was found that the enzyme exhibits a broader acceptor substrate specificity when compared to other sialyltransferases, though the donor specificity is quite limited. Application of the enzyme to the preparative synthesis of representative sialyl glycoconjugates has been demonstrated. On the basis of this work and the work of others, this enzyme is the most versatile and synthetically useful among all sialyltransferases known to date, especially for the synthesis of sulfate-containing glycoconjugates.

REFERENCE COUNT: 80 THERE ARE 80 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 4 OF 10 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 1

ACCESSION NUMBER: 2001:16874 CAPLUS

DOCUMENT NUMBER: 134:208116

TITLE: Heterobifunctional Ligands: Practical Chemoenzymatic Synthesis of a Cell Adhesive Glycopeptide That Interacts with Both Selectins and Integrins

AUTHOR(S): Matsuda, Masao; Nishimura, Shin-Ichiro; Nakajima, Fumio; Nishimura, Takashi

CORPORATE SOURCE: Division of Biological Sciences, Graduate School of Science, Hokkaido University, Sapporo, 060-0810, Japan

SOURCE: Journal of Medicinal Chemistry (2001), 44(5), 715-724

CODEN: JMCMAR; ISSN: 0022-2623

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 134:208116

AB An efficient and practical synthesis of cell adhesive glycopeptides

exhibiting unique properties as a novel type of modulator of cellular recognition is described. A non-natural glycopeptide (I) composed of sialyl Lewis x and Lys-Gly-Arg-Gly-Asp-Ser that interacts with both selectins and integrins has been systematically synthesized by combined chemical and enzymic strategy. It is suggested that glycopeptide I showed much higher affinity with P-selectin ($K_a = 6.6 \times 10^7 \text{ M}^{-1}$) and E-selectin ($K_a = 4.5 \times 10^5 \text{ M}^{-1}$) than sialyl Lewis x. This compound also inhibited a specific interaction between human integrin $\beta 1$ and its monoclonal antibody more effectively than the tetrapeptide Arg-Gly-Asp-Ser. Interestingly, it was demonstrated by surface plasmon resonance anal. that this heterobifunctional glycopeptide exhibited a capacity to form stable complexes with P-selectin and integrin $\beta 1$ concurrently. It is also suggested that this activity can be used for the inhibition of integrin-mediated adhesion of activated helper T cells onto collagen-coated plates as a cell migration model. These results indicate that the chemoenzymic hybridization strategy of different biol. functions of carbohydrates and peptides is a new concept for designing potent glycoconjugates as antiinflammatory and anticancer metastasis reagents.

REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 5 OF 10 MEDLINE on STN DUPLICATE 2
 ACCESSION NUMBER: 2000211217 MEDLINE
 DOCUMENT NUMBER: PubMed ID: 10745191
 TITLE: Engineering of coordinated up- and down-regulation of two glycosyltransferases of the O-glycosylation pathway in Chinese hamster ovary (CHO) cells.
 AUTHOR: Prati E G; Matasci M; Suter T B; Dinter A; Sburlati A R; Bailey J E
 CORPORATE SOURCE: Institute of Biotechnology, ETH Zurich, CH-8093 Zurich, Switzerland.
 SOURCE: Biotechnology and bioengineering, (2000 May 5) 68 (3) 239-44.
 Journal code: 7502021. ISSN: 0006-3592.
 PUB. COUNTRY: United States
 DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
 LANGUAGE: English
 FILE SEGMENT: Priority Journals
 ENTRY MONTH: 200005
 ENTRY DATE: Entered STN: 20000613
 Last Updated on STN: 20000613
 Entered Medline: 20000531

AB Production of O-linked oligosaccharides that interact with selectins to mediate cell-cell adhesion occurs in one segment of a branched glycan biosynthesis network. Prior efforts to direct the branched pathway towards selectin-binding oligosaccharides by amplifying enzymes in this branch of the network have had limited success, suggesting that metabolic engineering to simultaneously inhibit the competing pathway may also be required. We report here the partial cloning of the **CMP-sialic acid:Galbeta1,3GalNAcalpha2, 3-sialyltransferase** (ST3Gal I) gene from Chinese hamster ovary (CHO) cells and the simultaneous inhibition of expression of CHO cell ST3Gal I gene and overexpression of the human UDP-GlcNAc:Galbeta1, 3GalNAc-R beta1,6-N-acetylglucosaminyltransferase (C2GnT) gene. A tetracycline-regulated system adjoined to tricistronic expression technology allowed "one-step" transient manipulation of multiple enzyme activities in the O-glycosylation pathway of a previously established CHO cell line already engineered to express alpha1, 3-fucosyltransferase VI (alpha1,3-Fuc-TVI). Tetracycline-regulated co-expression of a ST3Gal I fragment, cloned in the antisense orientation, and of C2GnT cDNA resulted in inhibition of the ST3Gal I enzymatic activity and increase in C2GnT activity which varied depending on the extent of tetracycline reduction in the cell culture medium. This simultaneous regulated inhibition and activation of the two key enzyme activities in the O-glycosylation pathway

of mammalian cells is an important addition to the metabolic engineering field.

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L3 ANSWER 6 OF 10 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1984:506888 CAPLUS

DOCUMENT NUMBER: 101:106888

TITLE: Behavior of sugar derivatives in procedures for ganglioside isolation

AUTHOR(S): Yates, Allan J.; Warner, Jean K.

CORPORATE SOURCE: Coll. Med., Ohio State Univ., Columbus, OH, 43210, USA

SOURCE: Lipids (1984), 19(7), 562-9

CODEN: LPDSAP; ISSN: 0024-4201

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A common method of studying ganglioside metabolism is to measure the amts. of radioactivity incorporated into ganglioside from a radiolabeled precursor. This requires that radioactive nonganglioside material be completely removed from the ganglioside fraction. Nucleotide sugars and aminosugars comprise an important source of such contaminants; their behaviors in several procedures currently employed to isolate gangliosides are studied. Over 50% of the radioactivity associated with several nucleotide sugars added to a brain homogenate is extracted with CHCl₃-MeOH (2:1), and most of this is recovered in the upper phase of a Folch partition. Dialysis against H₂O removes almost all of the free aminosugar but only 70% of nucleotide sugar. Treatment with **alk. phosphatase**, phosphodiesterase and alkaline methanol followed by dialysis removes almost all of the nucleotide diphosphate sugars but only 88% of **CMP sialic acid** (CMP-NeuAc). Nucleotide sugars cannot be separated from gangliosides by Unisil or Iatrobead chromatog., but nucleotide diphosphate sugars and gangliosides are resolved with Sephadex LH-20 chromatog. following treatment with phosphodiesterase and **alk. phosphatase**. CMP-NeuAc was not satisfactorily separated from gangliosides by using any of the procedures.

L3 ANSWER 7 OF 10 MEDLINE on STN

DUPLICATE 3

ACCESSION NUMBER: 81184642 MEDLINE

DOCUMENT NUMBER: PubMed ID: 7225425

TITLE: Elevated sialyltransferase activity in the intestinal lymph of colchicine-treated rats.

AUTHOR: Ratnam S; Fraser I H; Collins J M; Lawrence J A; Barrowman J A; Mookerjea S

SOURCE: Biochimica et biophysica acta, (1981 Apr 3) 673 (4) 435-42. Journal code: 0217513. ISSN: 0006-3002.

PUB. COUNTRY: Netherlands

DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)

LANGUAGE: English

FILE SEGMENT: Priority Journals

ENTRY MONTH: 198107

ENTRY DATE: Entered STN: 19900316

Last Updated on STN: 19980206

Entered Medline: 19810720

AB There is a marked increase in sialyltransferase activity (EC 2.4.99.1) in serum and a profound change in the endogenous acceptor property of sialyltransferase in the intestine of colchicine treated rats (Fraser, Ratnam, Collins and Mookerjea, (1980) J. Biol. Chemical 255, 6617-6625). To ascertain the contribution of intestine as a source of this elevated serum enzyme, sialyltransferase and other enzymes activities were measured in intestinal lymph before and after colchicine treatment. There was a 4-fold increase of the enzyme activity in lymph 3 h after treatment. The lymph flow rate, protein concentration and composition as measured by polyacrylamide gel electrophoresis were not affected. The kinetic properties of lymph sialyltransferase (protein and time dependence, pH optima and Km values for the substrate **CMP-sialic**

acid) were essentially unchanged after treatment and were similar to the serum sialyltransferase. **Alkaline phosphatase** and lactic dehydrogenase activities remained unchanged. Although intestinal lymph sialyltransferase was increased by colchicine, enterectomy did not prevent the rise of serum sialyltransferase suggesting that the intestine is not a major source of the serum enzyme.

L3 ANSWER 8 OF 10 MEDLINE on STN DUPLICATE 4
ACCESSION NUMBER: 82111556 MEDLINE
DOCUMENT NUMBER: PubMed ID: 6119928
TITLE: A universal and rapid spectrophotometric assay of **CMP-sialic acid** hydrolase and nucleoside-diphosphosugar pyrophosphatase activities and detection in polyacrylamide gels.
AUTHOR: Van Dijk W; Lasthuis A M; Koppen P L; Muilerman H G
SOURCE: Analytical biochemistry, (1981 Nov 1) 117 (2) 346-53.
Journal code: 0370535. ISSN: 0003-2697.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198203
ENTRY DATE: Entered STN: 19900317
Last Updated on STN: 19900317
Entered Medline: 19820313

L3 ANSWER 9 OF 10 BIOTECHNO COPYRIGHT 2004 Elsevier Science B.V. on STN
DUPLICATE
ACCESSION NUMBER: 1981:12189973 BIOTECHNO
TITLE: A universal and rapid spectrophotometric assay of **CMP-sialic acid** hydrolase and nucleoside-diphosphosugar pyrophosphatase activities and detection in polyacrylamide gels
AUTHOR: Van Dijk W.; Lasthuis A.M.; Koppen P.L.; Muilerman H.G.
CORPORATE SOURCE: Dept. Med. Chem., Fac. Med., Free Univ., 1007 MC Amsterdam, Netherlands.
SOURCE: Analytical Biochemistry, (1981), 117/2 (346-353)
CODEN: ANBCA2
DOCUMENT TYPE: Journal; Article
COUNTRY: United States
LANGUAGE: English

AB A rapid spectrophotometric method is presented for the assay of the activities of nucleotide sugar hydrolases. The method is based upon the determination of free phosphate, liberated from the reaction products of the hydrolases during incubation, by exogeneously added **alkaline phosphatase**. It can be applied universally to the assay of the activities of the various nucleotide-sugar hydrolases (**CMP-sialic acid** hydrolase and nucleoside-diphosphosugar pyrophosphatases). The method can also be used for the detection of these enzymes in polyacrylamide slab gels and for the measurement of nucleotide-sugar concentrations as such.

L3 ANSWER 10 OF 10 MEDLINE on STN
ACCESSION NUMBER: 76136477 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1252477
TITLE: Characterization, distribution and biosynthesis of the major ganglioside of rat intestinal mucosa.
AUTHOR: Glickman R M; Bouhours J F
SOURCE: Biochimica et biophysica acta, (1976 Jan 22) 424 (1) 17-25.
Journal code: 0217513. ISSN: 0006-3002.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English

FILE SEGMENT: Priority Journals
ENTRY MONTH: 197605
ENTRY DATE: Entered STN: 19900313
Last Updated on STN: 19900313
Entered Medline: 19760510

AB The major sialic acid containing glycolipid has been isolated from rat intestinal mucosa. Characterization of this ganglioside by thin layer and gas chromatographic analysis indicates that it is an hematoside (GM3) with the major portion of the sialic acid in the N-glycolyl form. The distribution of this ganglioside was determined in villus and crypt cells isolated from rat intestine. The hematoside content of crypt cells was found to be significantly decreased when compared to villus cells.

CMP-sialic acid:lactosylceramide
sialyltransferase, responsible for the sialylation of lactosylceramide, was measured in differentiated villus and undifferentiated crypt cells and found to be greatly reduced in the crypt cell fraction. The present study demonstrates that marked differences in ganglioside content and biosynthesis occur in contiguous populations of cells in varying states of differentiation when isolated from normal rat intestine.

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